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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.    | CONFIRMATION NO. |
|---|-------------|----------------------|------------------------|------------------|
| 09/912,804  | 07/24/2001  | Surya Prakash        | 06618/408002/CTT2942-D | 7226             |
| 20985   | 7590        | 10/15/2004           | EXAMINER               |                  |
| FISH & RICHARDSON, PC<br>12390 EL CAMINO REAL<br>SAN DIEGO, CA 92130-2081 |             |                      | MERCADO, JULIAN A      |                  |
|   |             |                      | ART UNIT               | PAPER NUMBER     |
|   |             |                      | 1745                   |                  |

DATE MAILED: 10/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/912,804

**Applicant(s)**

PRAKASH ET AL.

**Examiner**

Julian Mercado

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 11-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 11-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 27, 2004 has been entered.

### ***Claim Rejections - 35 USC § 112***

The rejection of claims 1-5 under 35 U.S.C. 112, first paragraph has been withdrawn.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-5 and 11-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is drawn to a composition comprising a catalyst ink and a PSSA-PVDF membrane. A composition claim, however, is a claim type that defines the invention by chemical compounds and mixtures which may also include formulas which depict the chemical structure of the compound. The scope of the claim is therefore unclear as the

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recitation of a PSSA-PVDF membrane effectively incorporates an article and not a composition limitation as part of the broader claimed composition.

Claims 1-5 and 11-15 are rejected under 35 U.S.C. 112, second paragraph as being dependent upon a rejected base claim.

***Claim Rejections - 35 USC § 102***

The rejection of claims 1 and 2 under 35 U.S.C. 102(e) based on Cabasso et al. (U.S. Pat. 5,783,325) has been withdrawn.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Narayanan et al. (U.S. Pat. 5,945,231)

The applied reference has a common inventor and assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

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The rejection is maintained for the reasons already of record. The 35 U.S.C. 112, second paragraph rejection is set forth above, and to the extent that applicant's amendment calling for a composition comprising a catalyst ink and a PSSA-PVDF membrane are understood by the examiner, Narayanan et al. discloses that an alternative ink may be made out of crosslinked polystyrene sulfonic acid, i.e. PSSA and PVDF (also known in the art as KYNAR). (col. 8 line 42-46)

The catalyst includes a first layer of PVDF with a second layer of zeolite/crosslinked PSSA-PVDF. (col. 8 line 49-55, also applies to new claim 15)

Claims 1-5 and 11-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Prakash et al.

The applied reference has a common inventor and assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Regarding claims 1-5, 11 and 15 and to the extent that the claims are understood by the examiner for the reasons set forth under 35 U.S.C. 112, second paragraph (discussion above), Prakash et al. teaches a composition comprising a catalyst ink applied directly to the surface of a PSSA-PVDF membrane. (col. 6 line 38 et seq., col. 8 line 58-60) The ink comprises NAFION which is a copolymer of tetrafluoroethylene and perfluorovinylethersulfonic acid. (col. 8 line 56)

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As to claims 12-14, the composition includes a plasticizer such as dimethylacetamide. (col. 14 line 35-42)

***Double Patenting***

Claims 1, 2, 4, 5 and 11-15 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-14 of U.S. Patent No. 6,444,343 B1 in view of Cabasso et al. (U.S. Pat. 5,783,325).

The '343 B1 Patent teaches a PSSA-PVDF membrane.

The '343 B1 Patent does not explicitly teach a catalyst ink of a catalytic material and poly(vinylidene fluoride). However, Cabasso et al. teaches a catalyst ink for a fuel cell comprising a Pt catalytic material and poly(vinylidene fluoride). (col. 4 line 50-56, col. 6 line 8-21) The skilled artisan would find obvious to employ a catalyst ink in the '343 B1 Patent in order to provide an ionic transfer medium across the membrane.

The '343 B1 Patent does not explicitly teach a plasticizer. However, Cabasso et al. teaches a plasticizer such as DMA. (col. 7 line 64 et seq.) The skilled artisan would find obvious to employ a plasticizer for reasons such as solvation of the poly(vinylidene fluoride).

Claim 3 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-14 of U.S. Patent No. 6,444,343 B1 in view of Cabasso et al. (U.S. Pat. 5,783,325), and further in view of Denton et al. (U.S. Pat. 5,865,958).

The '343 B1 Patent does not explicitly teach a Pt:Ru mixture. However, the skilled artisan would find obvious to employ this mixture as Denton et al. specifically

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teach that a Pt:Ru catalytic metal pair is well-known such as found in conventional anodes using "20 wt % platinum, 10 wt % ruthenium catalyst". (col. 6 line 24)

### *Response to Arguments*

Applicant's arguments filed with the present amendment have been fully considered, however they are not persuasive.

Arguments against Cabasso et al. are deemed moot as the rejection under 102(e) and 103(a) based on this reference has been withdrawn.

As to Narayanan et al., the examiner notes applicant's argument that this reference does not teach a PSSA-PVDF membrane. However, in reply the examiner asserts that this reference does indeed teach such a membrane for the reasons detailed above.

### *Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Pat. 5,958,616 to Salinas et al. discloses a PVDF-PSSA membrane although having undesirable current density levels. (col. 3 line 3-7)

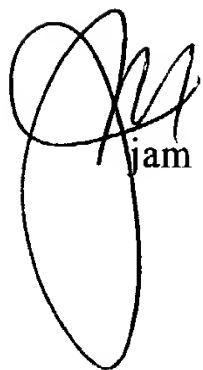
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julian Mercado whose telephone number is (571) 272-1289. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.


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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



jam



Patrick Ryan  
SPB-AU1745